

Patent claims

1. An electric sub-assembly consisting of a non-plated
printed circuit board (2) with electric conductor
5 tracks (3, 6) on the lower and upper side,
characterized in that an electric connection is made
between the conductor tracks (3, 6) on the upper and
lower side by at least one electrically conductive
10 contact pin (1), wherein
- (a) the printed circuit board comprises at least one
non-metallized opening (2),
- 15 (b) the opening (2) of the printed circuit board
comprises predetermined dimensions (D2) and for
forming a press connection the contact pin (1)
comprises over a first partial length (l1.1) a
defined oversize ($D1.1 > D2$) in relation to the
20 dimensions (D2) of the opening and
- (c) comprises a second partial length (l1.2) that lies
in front of the introduction direction with an
undersize ($D1.2 < D2$), which is smaller than the
25 dimension of the opening (D2),
- (d) the first partial length (l1.1) being smaller than
the depth (l2) of the opening (2) of the printed
30 circuit board, so that after being introduced at
least one part of the second partial length (l1.2)
remains in the opening.
- (e) the length (l1), that can be introduced, of the
35 contact pin (1) is greater than the depth (l2) of
the opening (2) so that the contact pin (1) once
pressed into the hole, passes through the printed
circuit board (2) and projects beyond the latter

circuit board (2) and projects beyond the latter in the introduction direction.

5 (f) around the opening (2) on the upper and lower side
of the printed circuit board (9) contact zones (3,
6) are each provided, which form an edge
corresponding to the dimensions (D2) of the
opening (2), so that the contact pin (1) once the
10 pin has been pressed into the hole on the face
lying in the introduction direction contacts the
contact zone (3), located there, of the conductor
track, and

15 (g) the contact pin (1) on the face opposite to the
introduction direction is electrically connected
by flow soldering to the contact zone (6), located
there, of the conductor track.

20 2. An electric sub-assembly according to claim 1,
characterized in that the second sub-section (11.2) of
the contact pin comprises an area of transition to the
first sub-section (11.1), in which a constant tapering
is effected.

25 3. An electric sub-assembly according to claim 1 or 2,
characterized in that the contact pin (1) is formed in
massive manner.

30 4. An electric sub-assembly according to one of the
preceding claims, **characterized in that** a printed
circuit board (9) made of CEM- or FR4-material is
used.

35 5. An electric sub-assembly according to one of the
preceding claims, **characterized in that** a stop (1.3)
is provided, which defines the length (11), that can

be introduced, of the contact pin (1).

- 5 6. An electric sub-assembly according to one of the
preceding claims, **characterized in that** when pressing
in the contact pin (1) on the face lying in the
introduction direction the edge of the contact zone
(3), located there, is cold-welded with the contact
pin (1) and that on the upper side of the printed
10 circuit board a gas-tight and solder-free press
connection is made between the contact pin (1) and the
contact zone (3).
7. An electric sub-assembly according to one of the
preceding claims, **characterized in that** the opening
(2) is punched in the printed circuit board (9).